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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/032,973	10/24/2001	Thomas Brinz	10191/2064	8723

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EXAMINER

JAGAN, MIRELLYS

ART UNIT PAPER NUMBER

2859

DATE MAILED: 03/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/032,973	Applicant(s) BRINZ, THOMAS	
	Examiner Mirellys Jagan	Art Unit 2859	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 January 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-14 and 16-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 and 16-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments filed 1/12/04 with respect to the finality of the last Office action, dated 11/6/03, have been fully considered and are persuasive. Therefore, the finality of the last Office action has been withdrawn.
2. Applicant's arguments filed 1/12/04, with respect to the rejection(s) of claim(s) 1-2, 6-8, 16, and 19 under 35 U.S.C. §103(a) over Oji in view of Gallmeyer have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of U.S. Patent 6,359,372 to Dujari et al, Japanese Patent 02206748 to Okuda et al, Japanese Patent 09325165 to Oji, and Japanese Patent 03122544 to Shimizu et al.

### ***Claim Objections***

3. Claims 11-14 and 16 are objected to because of the following informalities:

Claim 11 states the device "further comprises" a detection unit for detecting a portion of heating of the material. This limitation is not clear since it states that the device has a thermal sensor in addition to the sensors in claim 1 for detecting the change in temperature of the material. Furthermore, it is not clear from the specification and the drawings what the detection unit is, e.g., is it in the temperature control arrangement of figure 1? See page 4, lines 20-29.

In claim 13, there is lack of antecedent basis in the claim for "test areas" in line 3.

In claim 14, there is lack of antecedent basis in the claim for "test areas" in line 2.

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Claim 16 states the device “further comprises” an optical measurement unit for measuring a change in the shape of the material. This limitation is not clear since it states that the device has two measurement units (the unit of claim 1 and the unit of claim 16) for measuring a change in the shape of the material. Furthermore, it is not clear from the specification if two different measurement units are used simultaneously, e.g., are figures 2 and 3 used simultaneously? See page 5, lines 18-30.

Claim 12 is objected to for being dependent on objected base claim 11. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-4, 6-14, 16, 17, 20, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent 02206748 to Okuda et al [hereinafter Okuda] in view of U.S. Patent 6,359,372 to Dujari et al [hereinafter Dujari].

Okuda discloses a device for testing a deformable material, the device comprising:  
a radiation detector (109) having a local resolution and a detection unit having a temperature sensor (111) for detecting a change in temperature of the material (101) as the material deforms;

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an optical deformation measurement unit (107) for detecting a change in shape of the material when the material deforms;

an arrangement for performing a temperature control of the material, the arrangement including a chamber and a heating device; and

an analyzer unit for compensating s temperature increase in the material detected by the temperature sensor.

The device is used to measure the thermal expansion coefficient of the deformable material (see figures 1 and 2).

Okuda does not disclose the deformable material being a material that changes shape when an electric field is applied thereto; the device comprising a generator for generating the electric field to change the shape of the material; the material including a piezoactive material; the material including different piezoactive materials; the device having a unit that can periodically vary the electric field applied to the material; the material being arranged on a substrate; electrical contacting arranged on the piezoelectric material; a plurality of different test areas being arranged in a grid pattern on the substrate; and the electrical contacting being sputtered or glued.

Dujari discloses a deformable material comprising a plurality of piezoelectric materials (120) that change shape when an electric field is applied thereto, and are arranged on a substrate (104) in different areas forming a grid pattern or layered pattern and have metal electrode layers thereon for electrical contacting and a generator for generating the electric field such that it can vary the electric field applied to the piezoelectric materials. Dujari teaches that is useful to determine the thermal expansion coefficient of the deformable material when it deforms in order

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to allow the amount of deformation of the material to be controlled when it is used in a circuit card assembly (see column 2, line 22-column 3, line 5; and column 3, lines 18-41).

Referring to claim 1, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the device disclosed by Okuda by replacing the deformable material with a deformable material, as disclosed by Dujari, in order to determine the thermal expansion coefficient of the deformable material and properly control the deformation of the material when it is used in a circuit card assembly.

Referring to claim 13, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the device disclosed by Okuda and Dujari by making the plurality of piezoactive materials of different piezoactive materials in order to modify the manner in which the deformable material deforms when the piezoactive materials are located in different layers, if so desired.

Furthermore, claim 21 is a “product by process” claim since the claim language is directed to the steps required to form the metal electrode layers, i.e., by sputtering or gluing. Therefore, these steps have been given no patentable weight since it has been held that: 1) the determinations of patentability in “product by process” claims is based on the product itself, even though such claims are limited and defined by the process; and 2) the product in a “product by process” claim is unpatentable if it is the same as, or obvious from, a product of the prior art, even if the prior art product was made by a different process. See *In re Thorpe et al.*, 227 USPQ 964 (Fed. Cir. 1985).

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6. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okuda and Dujari, as applied to claims 1-4, 6-14, 16, 17, 20, and 21 above, and further in view of Japanese Patent 09325165 to Oji.

Okuda and Dujari disclose a device having all of the limitations of claim 19, as stated above in paragraph 7, except for the electric field varying as one of a sinusoidal change and a square-wave change.

Oji discloses a device for testing a piezoactive material that changes shape, the device having an optical measuring unit for measuring the change in shape of the material and a generator for generating electric field that varies periodically as a sinusoidal change. Oji teaches that such an electric field is useful for testing the deformation of the piezoactive material.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the device disclosed by Okuda and Dujari by replacing the electric field with the electric field as taught by Oji in order to provide an alternate electric field that is known to be useful for testing the deformation of the deformable material.

7. Claims 5 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okuda and Dujari, as applied to claims 1-4, 6-14, 16, 17, 20, and 21 above, and further in view of Japanese Patent 03122544 to Shimizu et al [hereinafter Shimizu].

Okuda and Dujari disclose a device having all of the limitations of claims 5 and 18, as stated above in paragraph 7, except for the device comprising an imaging unit for obtaining an image of the material, the unit including at least one of a photographic unit and a camera.

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Shimizu discloses a device for testing a deformable material, the device comprising a detection unit having a camera (10) for imaging the deformable material. The device is used to measure the thermal expansion coefficient of the deformable material. Shimizu teaches that is useful to use a camera when measuring the thermal expansion coefficient of a deformable material in order to determine and record the deformation experienced by the deformable material as it is tested (see figures 1 and 2).

Referring to claim 5, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the device disclosed by Okuda and Dujari by adding a camera to the device, as taught by Shimizu, in order to record the deformation experienced by the deformable material as it is tested.

8. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shimizu in view of Dujari.

Shimizu discloses a device for testing a deformable material, the device comprising a detection unit having a camera (10) for imaging the deformable material as it deforms and having an analyzer unit configured to determine a deformation of the material from the image. The device is used to measure the thermal expansion coefficient of the deformable material (see figures 1 and 2).

Shimizu does not disclose the deformable material being a material that changes shape when an electric field is applied thereto, and the device comprising a generator for generating the electric field to change the shape of the material.



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Dujari discloses a deformable material comprising a plurality of piezoelectric materials (120) that change shape when an electric field is applied thereto, and are arranged on a substrate (104) in different areas forming a grid pattern or layered pattern and have metal electrode layers thereon for electrical contacting and a generator for generating the electric field such that it can vary the electric field applied to the piezoelectric materials. Dujari teaches that is useful to determine the thermal expansion coefficient of the deformable material when it deforms in order to allow the amount of deformation of the material to be controlled when it is used in a circuit card assembly (see column 2, line 22-column 3, line 5; and column 3, lines 18-41).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the device disclosed by Shimizu by replacing the deformable material with a deformable material, as disclosed by Dujari, in order to determine the thermal expansion coefficient of the deformable material and properly control the deformation of the material when it is used in a circuit card assembly.

### ***Conclusion***

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The following patent discloses a system for measuring the change in shape of an object:

U.S. Patent 5,055,648 to Iceland et al

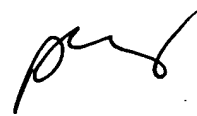
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10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mirellys Jagan whose telephone number is 703-305-0930. The examiner can normally be reached on Monday-Thursday from 8AM to 4PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego Gutierrez can be reached on 703-308-3875. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MJ  
February 17, 2004



**Diego Gutierrez**  
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